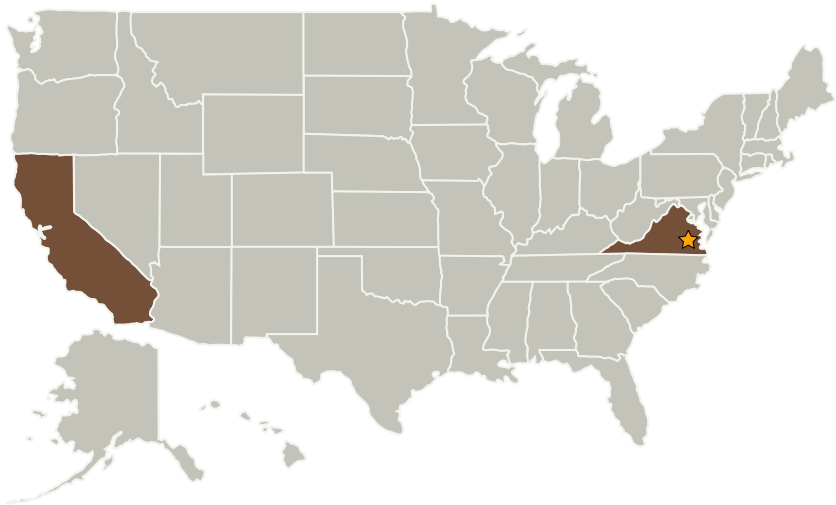
Hypersonic Control Modeling and Simulation Tool for Lifting Towed Ballutes, Phase I

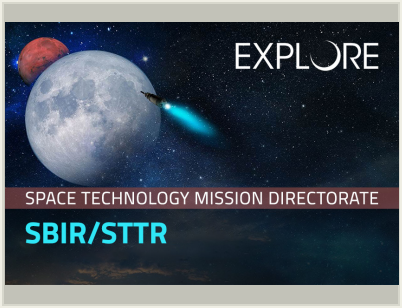
Completed Technology Project (2009 - 2009)

Project Introduction

Global Aerospace Corporation proposes to develop a hypersonic control modeling and simulation tool for hypersonic aeroassist vehicles. Our control and simulation testbed will be focused on the particularly important problem of a lifting, towed ballute for planetary aerocapture. The importance of this technology innovation is in the understanding it can provide NASA on the control of hypersonic vehicles, in particular, of lifting towed ballutes. Lift control of a towed ballute will enable the use of smaller and lighter-weight ballutes for planetary orbit capture, which will make ballutes more attractive and feasible for missions to planets such as Neptune where high heating rates require extremely large ballutes for ballistic capture. The application of the comprehensive tool, to be developed in later phases, will be extensive including, but not limited to, control studies for entry and descent, aerocapture, and aero-gravity-assist with a range of hypersonic aeroassist systems (e.g. rigid and deployable aeroshells, waveriders, etc.). This proposal responds directly to the request in subtopic A2 to "leverage the foundational research to develop technologies and analytical tools focused on discipline-based solutions." In addition, in the hypersonic focus arena, we are responding directly to the interest in "system dynamic models incorporating the essential coupled dynamic elements with varying fidelity for control design, analysis and evaluation" and "simulation test beds for evaluating hypersonic concept vehicle control."

Primary U.S. Work Locations and Key Partners





Hypersonic Control Modeling and Simulation Tool for Lifting Towed Ballutes, Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

Hypersonic Control Modeling and Simulation Tool for Lifting Towed Ballutes, Phase I

Completed Technology Project (2009 - 2009)

Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Global Aerospace Corporation	Supporting Organization	Industry	Irwindale, California

Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.1 Aeroassist and Atmospheric Entry
    - TX09.1.2 Hypersonic Decelerators